

AMENDMENTS TO THE DRAWINGS

The attached sheets of drawings include changes to Figs. 5, 6 and 7. These sheets, which include Figs. 4-9, replace the original sheets including Figs. 4-9. In Figs. 5-7, the legend – Prior Art – has been added.

Attachment: Replacement sheets 2 and 3
 Annotated sheets showing changes

REMARKS

This Amendment is in response to the Office Action mailed June 30, 2005. Claims 1-8 have been amended. Claims 9 and 10 have been added.

Figs. 5-7 have been designated by the legend – Prior Art – to comply with paragraph 1 of the Office Action.

In paragraphs 2-4 of the Office Action, claims 1, 7 and 8 are objected to because of certain informalities. These informalities have been appropriately corrected.

In paragraphs 5-6 of the Office Action, the Examiner rejects claim 2 under 35 U.S.C § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. In particular, claim 2 recites the phrase “multiples each prescribed weight.” Applicant has amended this claim to recite “multiplies a prescribed weight.” In doing so, Applicant has not narrowed the scope of this claim.

In paragraphs 7-9 of the Office Action, claims 3 and 4 are rejected under 35 U.S.C. § 101 and 35 U.S.C § 112, first paragraph, since the preamble recites a method claim, but the body of the claim comprises structural elements. The Office Action states that, “it is unclear whether Applicant’s invention is directed towards an apparatus or a method” and “the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility” such that “one skilled in the art clearly would not know how to use the claimed invention.” In response, claims 3 and 4 have been amended to change the elements from structural elements to steps. Therefore, these claims recite methods and not apparatuses.

In paragraphs 10-11 of the Office Action, claim 8 is rejected under 35 U.S.C. § 102 as anticipated by Applicant’s admitted prior art (AAPA). Upon review of the Article 34 Amendment, sheet 12/1, it appears that the original text of claim 8 is missing from this sheet. Claim 8 has been amended to add the original text of the claim from

sheets 16 and 17 of the original specification. This claim, as amended, overcomes the Examiner's rejection on this ground.

In paragraphs 12-14 of the Office Action the Examiner rejects claims 1-7 under 35 U.S.C. § 103(a) as being unpatentable over Applicants admitted prior art (AAPA) in view of U.S. Patent No. 5, 912,876 to H'miny, and in further view of U.S. Patent No. 6,307,879 to Moriyama. The Examiner's rejection on this ground is respectfully traversed.

Among the limitations of independent claim 1 which are neither disclosed nor suggested in the art of record is the requirement that the apparatus comprises an equalization filter and "that the frequency characteristics of said equalization filter are inverse to that of the estimation results [for the transmission channel]." Likewise, independent claim 3 recites "equalizing and demodulating said modulated signals from said base station, by using a filter of which frequency characteristics is inverse with that of said radio channels." Similarly independent claim 5 recites "equalizing said modulated signals using an equalization filter unit having frequency characteristics that are inverse from said radio channels." Independent claims 6-8 recite similar limitations.

H'miny does not disclose an equalization filter as claimed. H'miny discloses a method for channel response estimation of an orthogonal frequency division multiplexing (OFDM) signal, and correction of that signal by reducing additive white Gaussian noise (AWGN). With reference to Fig. 1, in the disclosed method, both a coded, modulated main signal (ref. no. 32, carrying the data) and a coded pilot signal (ref. no. 30) are combined (i.e., multiplexed, ref. no. 40). The received pilot signal is decoded (ref. no. 85), and then the frequency response of the channel is estimated from the decoded pilot signal (ref. no. 90). Subsequently, the decoded main signal (as output by accumulator, ref. no. 80) is multiplied by the inverse of the estimated channel response (ref. no. 95). H'miny expressly suggests that the "source of error in estimating the channel frequency response signal is the AWGN." H'miny, col. 4, ll. 39-40. Accordingly, H'miny does not teach or suggest an equalization filter that equalizes the spread signals, and thus does not solve the problem of reducing interference generated from other frequency distorted, coded signals. In the present invention, radio

transmission channel frequency distortion is eliminated by equalizing the spread spectrum signal based on the frequency response of the radio transmission channel. Interference from other codes is eliminated when the main signal is decoded from the equalized channel signal spectrum. In the absence of any disclosure or suggestion of this feature of the invention, independent claims 1, 3, 5-8 are believed to be in condition for allowance.

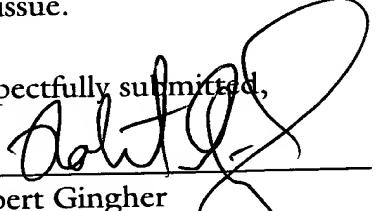
Claims 2, 4, 9 and 10 depend from independent claims 1 and 3 respectively, and include all the limitations found therein, and are therefore allowable for at least the same reasons. In addition, claims 2 and 4 recite additional limitations, such as a finite impulse response filter, which has not been used to eliminate distortion of received modulated signals in a code division multiple access cellular system. This filter limitation, in combination with the limitations of claims 1 and 3, are not disclosed or suggested in the art of record.

Furthermore, H'miny does not disclose equalizing the received main signal *before* decoding. H'miny discloses using an orthogonally coded pilot signal to estimate the frequency response of the radio channels, and then applying the inverse of this frequency response *after* decoding the main signal. See H'miny, Fig. 1. Dependent claim 9 recites the requirement that the apparatus comprises an equalization filter "that equalizes distortion of the received modulated signals before decoding the received signals." Likewise, dependent claim 10 recites "wherein said equalizing is performed before said demodulating in said equalizing and demodulating step." Similarly independent claims 5-8 recite "demodulating the outputs from said [equalization] filter unit." In the absence of any disclosure or suggestion of this additional feature of the invention, independent claims 5-8 and new claims 9 and 10 are believed to be in condition for allowance for these additional reasons.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

Dated: September 12, 2005

Respectfully submitted,

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Attachments

Fig. 4

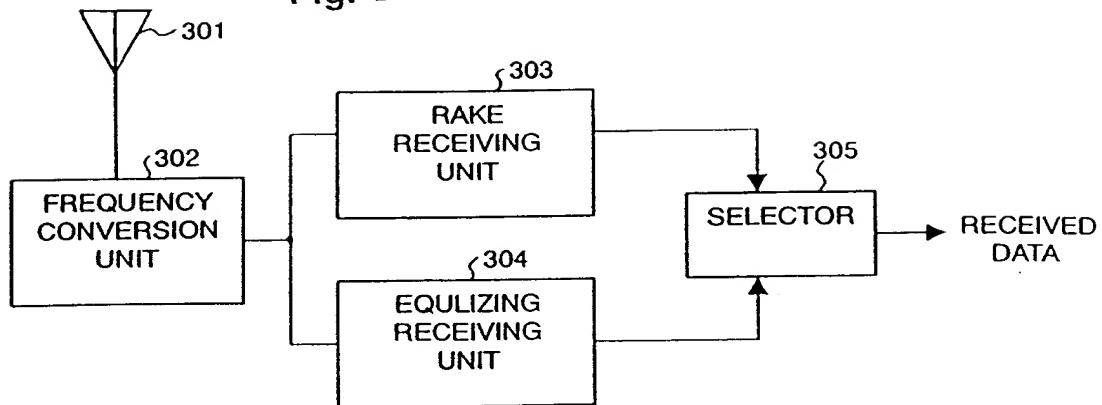


Fig. 5

PRIOR ART

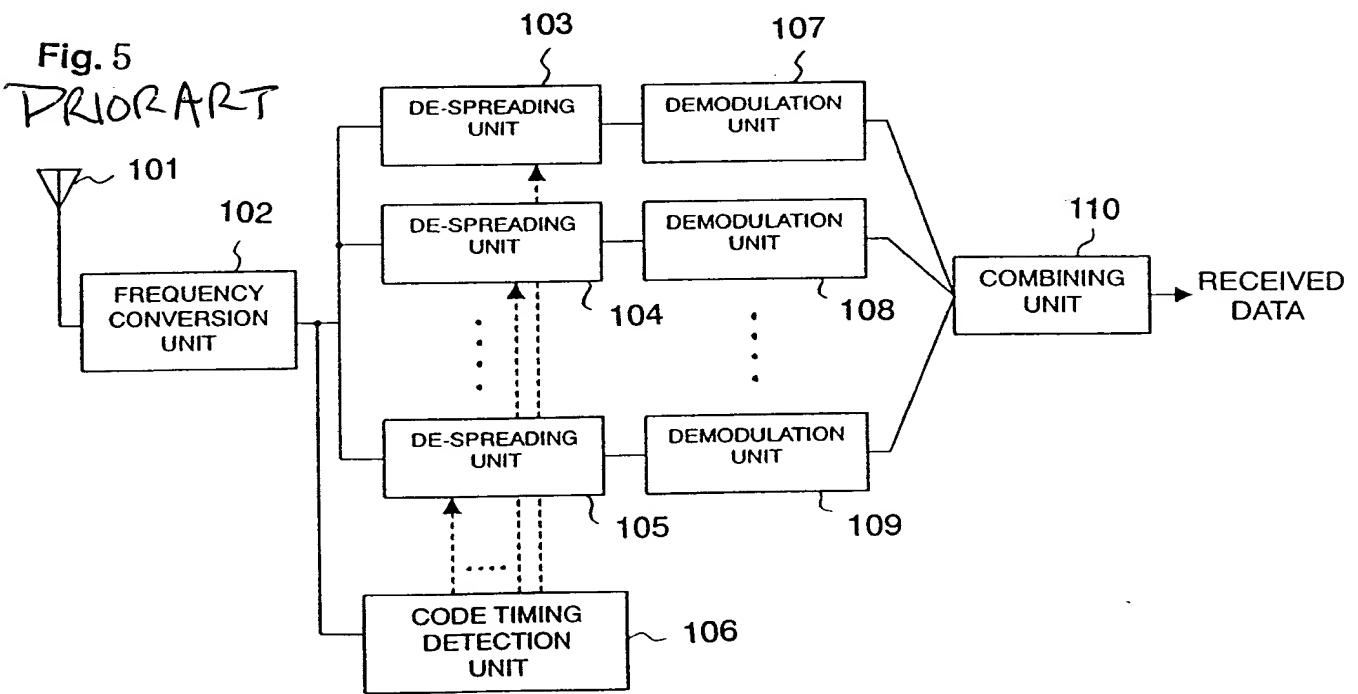


Fig. 6

PRIOR ART

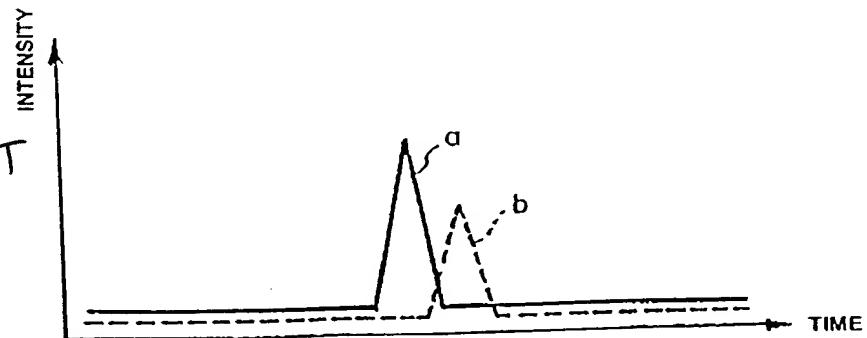


Fig. 7
PRIOR ART

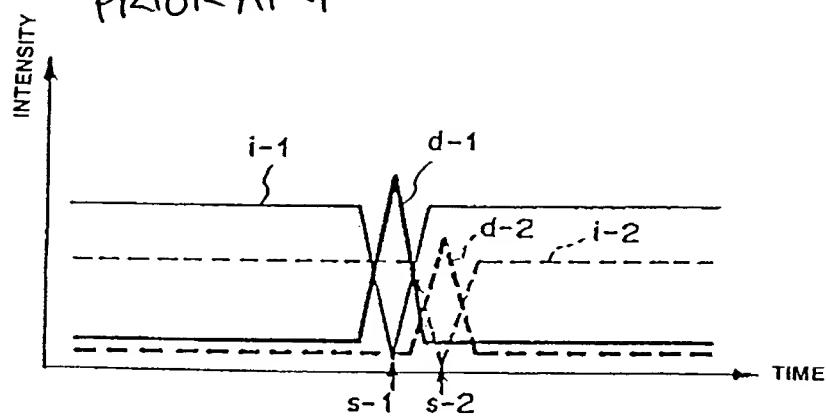


Fig. 8

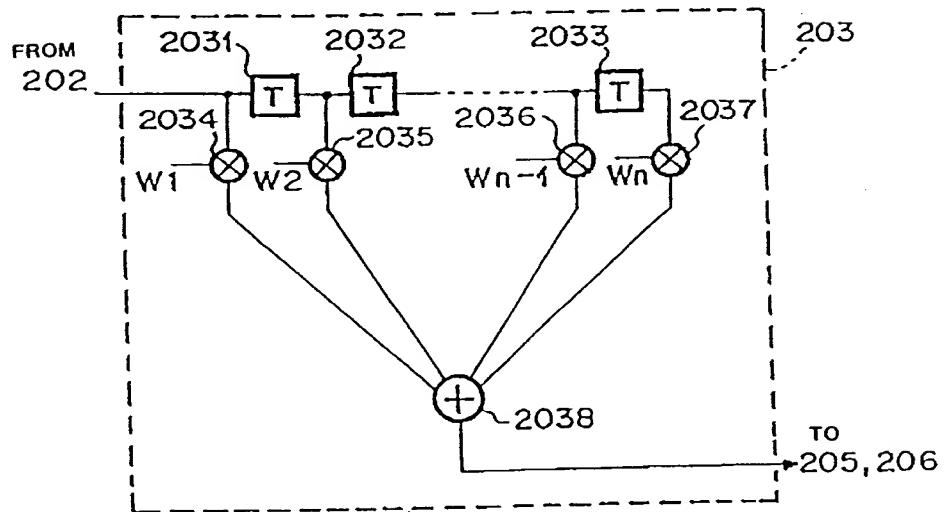


Fig. 9

